AMENDMENTS

In the Claims:

1. (original) A voice activity detect (VAD) method for detecting voice activity in communications signals, comprising the steps of:

determining an average noise energy level of the communications signals based on noise energy amplitude during periods of no voice activity;

converting the average noise energy level to sidetone attenuation, the sidetone attenuation increasing with increased noise energy level;

generating a VAD threshold based at least in part on the sidetone attenuation; and

performing VAD based on the generated VAD threshold.

2. (original) The method of claim 1, wherein the step of determining the average noise energy comprises:

detecting periods of no voice activity;

determining a noise energy amplitude during the periods of no voice activity; and

integrating the noise energy amplitude over an integration period to generate the average noise energy.

3. (original) The method of claim 1, wherein the step of converting comprises converting the average noise energy level to sidetone attenuation according to a predetermined ambient noise to sidetone attenuation transfer function and according to attack and release time constants.

4. (original) The method of claim 3, wherein predetermined ambient noise to sidetone attenuation transfer function includes low and high ambient noise thresholds and minimum and maximum sidetone attenuation levels, the sidetone attenuation being set to the minimum sidetone attenuation level when the noise energy level is below the low ambient noise threshold and to the maximum sidetone attenuation level when the noise energy level is above the high ambient noise threshold.

5. (original) The method of claim 4, wherein the sidetone attenuation increases linearly between the minimum and maximum sidetone attenuation levels as the noise level increases from the low to the high ambient noise threshold.

6. (original) The method of claim 1, wherein the step of generating the VAD threshold includes utilizing at least one of an estimated, an actual, or an expected increase in voice level based on the sidetone attenuation.

7. (original) The method of claim 1, wherein the sidetone attenuation is defined in terms of sidetone masking rating (STMR), the STMR ranging between a minimum STMR and a maximum STMR, the STMR being set to the minimum STMR when the noise energy level is below a low ambient noise threshold and the STMR being set to the maximum STMR when the noise energy level is above a high ambient noise threshold.

8. (original) The method of claim 1, wherein the maximum sidetone attention is approximately 12 dB.

9. (original) The method of claim 1, wherein the VAD threshold is increased in proportion to the increase in voice level.

10. (original) The method of claim 1, wherein the VAD threshold is increased based on the sidetone attenuation.

11. (original) The method of claim 1, wherein the VAD threshold includes a VAD vector of thresholds each corresponding to an audio frequency sub-band.

12. (original) The method of claim 1, further comprising the step of reducing a gain on the communications signals in proportion to the increase in voice level.

13. (original) A voice activity detect (VAD) system, comprising:

an adaptive VAD threshold generator configured to generate a VAD threshold based at least in part on a sidetone attenuation, the sidetone attenuation being based on an average ambient noise energy level determined from a noise energy amplitude during periods of no voice activity, the sidetone attenuation increasing with increased noise energy level; and

a comparator configured to compare received signals to the adaptive VAD threshold to determine existence of voice activity.

14. (original) The system of claim 13, wherein the sidetone attenuation is based on the average ambient noise energy level in accordance with a predetermined ambient noise to sidetone attenuation transfer function and in accordance with attack and release time constants.

15. (original) The system of claim 14, wherein predetermined ambient noise to sidetone attenuation transfer function includes low and high ambient noise thresholds and minimum and maximum sidetone attenuation levels, the sidetone attenuation being set to the minimum sidetone attenuation level when the noise energy level is below the low ambient noise threshold and to the maximum sidetone attenuation level when the noise energy level is above the high ambient noise threshold.

16. (original) The system of claim 13, wherein the sidetone attenuation increases linearly between the minimum and maximum sidetone attenuation levels as the noise level increases from the low to the high ambient noise threshold.

17. (original) The system of claim 13, wherein the increase in voice level resulting from sidetone attenuation utilized by the adaptive VAD threshold generator includes at least one of an estimated, an actual, or an expected increase in voice level based on the sidetone attenuation.

18. (original) The system of claim 13, wherein the sidetone attenuation in defined in terms of sidetone masking rating (STMR), the STMR ranging between a minimum STMR and a

maximum STMR, the STMR being set to the minimum STMR when the noise energy level is below a low ambient noise threshold and the STMR being set to the maximum STMR when the noise energy level is above a high ambient noise threshold.

19. (original) The system of claim 13, wherein the maximum sidetone attention is approximately 12 dB.

20. (original) The system of claim 13, wherein the VAD threshold is increased in proportion to the increase in voice level.

21. (original) The system of claim 13, wherein the VAD threshold is increased based on the sidetone attenuation.

22. (original) The system of claim 13, wherein the VAD threshold includes a VAD vector of thresholds each corresponding to an audio frequency sub-band.

23. (original) The system of claim 13, further comprising a communications signal gain reducer configured to reduce a gain on the communications signals in proportion to the increase in voice level.

24. (amended) A communications system, comprising:

a microphone for receiving communications signals;

a voice activity detector utilizing an adaptive VAD threshold; and

an adaptive sidetone control in communication with the microphone and the voice activity detector, the sidetone control to adaptively control a sidetone level based on an average ambient noise energy level determined from a noise energy amplitude during periods of no voice activity as determined by the voice activity detector, the adaptive sidetone control being configured to adaptively increase attenuation of the sidetone level with increased ambient noise level, wherein the adaptive VAD threshold is generated at least in part on the sidetone level.

25. (original) The system of claim 24, wherein the sidetone attenuation is based on the average ambient noise energy level in accordance with a predetermined ambient noise to sidetone attenuation transfer function and in accordance with attack and release time constants.

26. (original) The system of claim 25, wherein the predetermined ambient noise to sidetone attenuation transfer function includes low and high ambient noise thresholds and minimum and maximum sidetone attenuation levels, the sidetone attenuation being set to the minimum sidetone attenuation level when the noise energy level is below the low ambient noise threshold and to the maximum sidetone attenuation level when the noise energy level is above the high ambient noise threshold.

27. (original) The system of claim 24, wherein the sidetone attenuation increases linearly between the minimum and maximum sidetone attenuation levels as the noise level increases from the low to the high ambient noise threshold.

28. (original) The system of claim 24, wherein the voice activity detector includes:

an adaptive voice activity detect (VAD) threshold generator configured to generate a VAD threshold based at least in part on the attenuation of the sidetone level; and

a comparator configured to compare the VAD threshold with the communications signals to determine existence of voice activity.

29. (original) The system of claim 28,wherein the adaptive VAD threshold generator is configured to generate the VAD threshold based at least in part on an increase in voice level resulting from sidetone attenuation, the increase in voice level utilized by the adaptive VAD threshold generator includes at least one of an estimated, an actual, or an expected increase in voice level based on the sidetone attenuation.

30. (original) The system of claim 28, wherein the VAD threshold is increased in proportion to the increase in voice level.

31. (original) The system of claim 28, wherein the VAD threshold is increased based on the sidetone attenuation.

32. (original) The system of claim 28, wherein the VAD threshold includes a VAD vector of thresholds each corresponding to an audio frequency sub-band.

33. (original) The system of claim 24, wherein the sidetone attenuation in defined in terms of sidetone masking rating (STMR), the STMR ranging between a minimum STMR and a maximum STMR, the STMR being set to the minimum STMR when the noise energy level is below a low ambient noise threshold and the STMR being set to the maximum STMR when the noise energy level is above a high ambient noise threshold.

34. (original) The system of claim 24, wherein the maximum sidetone attention is approximately 12 dB.

35. (original) The system of claim 24, further comprising a communications signal gain reducer configured to reduce a gain on the communications signals in proportion to the increase in voice level.